

now in course of publication. In addition to the above periodicals, three "special memoirs" have also been issued, and it is hoped that others will be added from time to time. In 1885 appeared Prof. Meldola's and Mr. White's "Report on the East Anglian Earthquake of 1884," in 1890 Mr. Miller Christy's "Birds of Essex," and in 1898 Mr. Henry Laver's "Mammals, Reptiles and Fishes of Essex." All these works were noticed in our pages at the time of publication. Four "museum handbooks" must also be credited to the club.

Not the least important part of the results achieved since 1880 is the establishment and maintenance of two museums, one of a strictly local character for the Epping Forest district at Queen Elizabeth's Lodge, Chingford, and the other of a county and educational character at West Ham in connection with, and attached to, the Municipal Technical Institute (see illustration). The first of these is carried on under an agreement with the Corporation of London, as conservators of Epping Forest. The other (county) museum was founded for the club by Mr. Passmore Edwards, and is maintained by the Borough Council of West Ham and the Essex Field Club, the library and headquarters of which are now in this same building. The personnel of the club as narrated by Mr. Christy is also of interest. The presidency has been held in succession by Prof. Meldola, Prof. Boulger, Mr. T. V. Holmes, Mr. E. A. Fitch, Mr. H. Laver, Mr. F. Chancellor, Mr. David Howard, Prof. Meldola, Mr. F. W. Rudler, and Mr. Miller Christy. All these are still living and active supporters of the club, while Mr. William Cole has acted as hon. secretary, editor of the publications, and curator of the museums during the whole twenty-five years of the society's existence.

There are few, if any, local societies in this country which can show such a good record. The Essex Field Club has earned the gratitude, not only of its own county, but of the world of field naturalists generally for the splendid example which it has set in showing how such organisations can keep alive the spirit of scientific research in the rural districts. In congratulating the club on its past achievements, we feel sure that the wish that its future work may be carried on with equal success will be cordially endorsed by all readers of NATURE.

#### THE MOSQUITOES OF PARÁ.<sup>1</sup>

IN 1859, when H. W. Bates returned from Pará, the town, though rapidly improving even then, was still a little-known Brazilian port, and Bates embarked on a North American trading vessel, "the United States route being the quickest as well as the pleasantest way of reaching England." At present, however, Pará is a very important place, and well up to date in scientific matters—if we may judge by the handsome publication before us, on one of the more recent branches of scientific inquiry—the transmission of yellow fever and other diseases by means of mosquitoes.

Four essays are included in the present volume, the first dealing with the mosquitoes of Pará regarded as a public calamity. This section is devoted to an historical sketch of the subject, the biology of mosquitoes, the views of various writers on the sanitary importance of the subject, and on the urgent need of practical efforts to abate the evil.

<sup>1</sup> "Memorias do Museu Goeldi (Museu Paraense) de Historia Natural e Ethnographia." IV. Os Mosquitos no Pará. Reuniao de quatro trabalhos sobre os Mosquitos indigenas, principalmente as especies que molestam o homem. By Prof. Dr. Emilio Augusto Goeldi. With 100 figures in text and 5 chromo-lithographic plates. Pp. 154. (Pará, Brazil: C. Wiegandt, 1905.)

The second essay contains an abstract of the results of experiments undertaken in 1903, with special reference to *Stegomyia fasciata* and *Culex fatigans*, regarded from a sanitary point of view.

The third essay is devoted to biological details chiefly relating to the development of the principal indigenous species.

The fourth essay consists of a report on *Stegomyia*

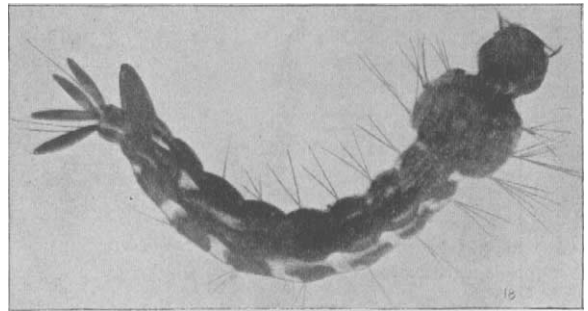


FIG. 1.—Larva of *Stegomyia fasciata*.

*fasciata* and its connection with the transmission of yellow fever. This was presented to the International Zoological Congress at Berne in August, 1904.

The book appears to be an extremely careful and valuable piece of work, and the paper, printing, and illustrations leave little or nothing to be desired. It must not be overlooked by any worker who is interested in mosquitoes either from a scientific or

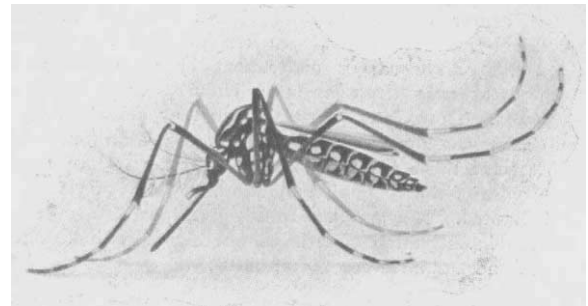


FIG. 2.—*Stegomyia fasciata* ♀ at rest.

from a medical point of view. Several new forms are described; and on p. 73 even the musical note of *Stegomyia fasciata* is discussed—a slight but significant illustration of the intimate connection and interdependence of all branches of human knowledge.

The figures which we have selected for reproduction represent the larva and imago of *Stegomyia fasciata*.  
W. F. K.

#### NOTES.

IN connection with the Conservatoire des Arts et Métiers, a museum of industrial hygiene will be opened this month at Paris by the President of the Republic.

PRINCE SERGE TROUBETZKOI, Rector of the University of Moscow, and professor of philosophy in that university, died at St. Petersburg on October 12.

THE death is announced of Mr. A. C. Pass, one of the early and most enthusiastic members of the Bristol Naturalists' Society, and for many years president of the geological section of the society.

A VIOLENT shock of earthquake occurred at Monteleone at 3.40 p.m. on October 14. The shock was felt at Messina at 3.42 p.m.; and a shock is reported to have occurred at Reggio di Calabria at 2.45 p.m.

WE learn from the *Times* that the Royal Prussian Aëronautic Observatory, recently completed, was opened on Monday, October 16, at Lindenberg, in the province of Brandenburg, in the presence of the Emperor William and the Prince of Monaco. The Emperor, in a speech, eulogised the many services rendered by the Prince of Monaco to science, and conferred upon him the large golden medal for science.

THE post-graduate college, West London Hospital, was opened on October 12 with an introductory address by Mr. Tweedy, the president of the Royal College of Surgeons, who emphasised the need for post-graduate training in medicine, and suggested that a post-graduate course should be made compulsory after a certain period in a man's career.

MR. WYNDHAM, M.P., was present at the annual *conversazione* of the Chester Society of National Science and Literature on October 12, and delivered an address. He accompanied Lady Grosvenor, who made a presentation to Mr. Robert Newstead, formerly curator of the Grosvenor Museum and now attached to the Liverpool School of Tropical Medicine. The gift consisted of a life-size carbon portrait of himself and a purse of more than two hundred guineas. Lady Grosvenor also presented the Kingsley medal to Dr. C. Theodore Green.

AN interesting account is given in the *Times* (October 10) of the cancer department and cancer research at the Middlesex Hospital. Since 1792 the hospital has maintained a separate cancer department by an endowment which first came through John Howard from Samuel Whitbread. The cancer wards, which now contain forty-nine beds, combine the functions of an almshouse or asylum with those of a hospital, for, in accordance with the purpose of the original foundation, the stay of patients is not limited. Howard also contemplated new discoveries from the investigation of a large number of patients and from the accumulated records of these.

THE programme of the London Institution for the session 1905-6 includes the following lectures among others:—The origin of the elephant, Prof. E. Ray Lankester, F.R.S.; submarines, Sir W. H. White, K.C.B., F.R.S.; geographical botany interpreted by direct response to the conditions of life, Rev. George Henslow; the Upper Nile, Sir Charles Eliot, K.C.M.G.; variation in man and woman, Prof. Karl Pearson, F.R.S.; our atmosphere and its wonders, Prof. Vivian B. Lewes.

THE Sociological Society has now issued its programme of meetings arranged for the winter session, along with a list of papers to be delivered before its affiliated societies in the universities of Oxford and Manchester. It is noticeable that a new departure has been made by the Sociological Society in the holding of research meetings (at which papers of interest to specialists only will be read and discussed) in addition to its ordinary monthly meetings for the reading and discussion of papers of general interest. The following papers have been arranged for the ordinary monthly meetings:—The biological foundations of sociology, Dr. Archdall Reid; the origin and function of religion, Mr. A. E. Crawley; and the Institut de Sociologie, its equipment and work, M. Waxweiler. The papers to be

delivered at the research meetings are:—The study of the individual, Dr. J. L. Tayler; and biological methods in application to social problems, M. Waxweiler.

AN address of considerable importance from the standpoint of the connection between scientific training and industrial development was recently delivered by Mr. W. Burton on the occasion of the prize distribution to students of the county pottery classes at Tunstall, Staffordshire. At the outset Mr. Burton emphasised the fact that manufacturers in Staffordshire are beginning to realise the value of technical schools as a means of training students to be of real service to them. But, looking backwards, few industries in this country have during the past thirty years drawn so little aid from the resources of science as the pottery industry. The methods employed in pottery at the present day do not differ very greatly from those in use at the time of Josiah Wedgwood. But in science there has been an almost phenomenal advance since the early discoveries of Priestley, the contemporary and friend of Wedgwood. In taking up the study of pottery to-day, the student has to commence for himself almost entirely from the beginning; there is no accumulated store of knowledge and experience, such as exists in all branches of science, from which he may draw. The supreme gift of scientific training in method, Mr. Burton continues, is the power to see. "How many problems are there that present themselves to us every day in our businesses that really disappear—are no longer problems—if we once see them clearly?" The commercial organiser of a business has two problems always facing him, first the economic production of his goods, and secondly the disposal of these goods in the market. A scientific training, in so far as it gives knowledge tending to the solution of these problems, is of direct value to the commercial side of business; many problems can be solved only by scientific methods. But, Mr. Burton urges in conclusion, manufacturers should not look for too immediate results from the employment of a scientifically trained man. "Remember, he must have time to apply his science to your industry. He must have time for experiment, and must be given both leisure and the fullest opportunity to follow out those lines of prolonged and systematic investigation on which alone scientific knowledge has been built."

THE September issue of the *Proceedings of the Philadelphia Academy* contains the first portion of a long paper by Mr. C. S. Sargent on the species of thorns of the genus *Cratægus* found in eastern Pennsylvania, mainly based on collections and notes made by several local botanists.

THE *Irish Naturalist* for October opens with an illustrated paper by that enthusiastic ornithologist Mr. E. Williams on the recent occurrence in Ireland of a number of specimens of the Greenland and Iceland falcons, more especially the former. Previous records of the occurrence in Ireland of the Greenland falcon included nineteen instances, now raised to twenty-eight by the occurrence of no less than nine examples during the present year. On the other hand, only two previous records of the occurrence of the Iceland falcon were known, this number being raised to three by the capture of an immature female in Galway in March. The author speculates why the Iceland falcon should be so much more rare in Ireland than the far more distant Greenland species.

THE *Halifax Courier* of September 30 contains a full report of a long paper, read at the first meeting for the present session of the Halifax Scientific Society, on the educational value of the Bankfield Museum, by Mr. L.

Roth, the hon. curator. This institution, which is under the control of the Halifax municipality, is devoted to art, local history, numismatics, and ethnology, and it has been the object of the present curator during his whole term of office to make these collections thoroughly representative and of real educational value. Consequently he has rigorously excluded from the exhibition cases all specimens coming merely under the designation of "curios," and devoid of special local or educational interest—an example which might, by the way, be followed by the authorities of at least one rate-supported local museum we could name. Whether this rigid censorship has aroused ill-feeling we cannot say, but at the conclusion of his address Mr. Roth referred in somewhat bitter terms to the apathy displayed by the municipal authorities towards his efforts. Certainly thirty-six guineas a year is not a lavish sum for the needs of such a museum, and the committee appear to have funds at their disposal which they refuse to spend.

No. 13 B. of the *Publications de Circonstance*, recently issued in Copenhagen by the International Council for the Study of the Sea, contains an account of the present condition of the German fisheries in the Baltic, and is a continuation of the publication already issued (No. 13 A) on the Danish and Swedish fisheries in that sea. The present work has been prepared for the German Sea-Fisheries Association by Dr. E. Fischer in cooperation with Prof. H. Henking. It gives in a concise form information as to the different kinds of fishing practised in the area, as well as an account of the boats, nets, and other fishing gear employed, and of the quantities and values of the fish landed. The fluctuations of the various fisheries from year to year for the last ten years are shown in a series of tables and curves, and a number of lithographed charts illustrate the relative local abundance of different species of fish along the German coasts of the Baltic.

THE second part of the first volume of the useful little flora of the upper Gangetic plain, by Mr. J. F. Duthie, has been published recently; it includes the orders Caprifoliaceæ to Campanulaceæ, and the index to the volume.

THE late Prof. L. Errera showed a marked preference for physiological problems, and one of his last papers, which is published in vol. xlii. of the *Bulletin de la Société royale de botanique de Belge*, takes up the difficult subject of the ultimate cause behind reaction in plants. The paper deals with dominance and inhibitory action, as exemplified in the correlation existing between the directions assumed by the main vertical shoot of a tree and its branches under the influence of geotropic stimulus. Nutrition or polarity has generally been invoked to furnish an explanation, but Prof. Errera argues in favour of inhibiting action, possibly due to internal secretions.

REPORTS for 1904-5 on the botanic stations at Antigua and St. Kitts have been received. Owing to the want of uniformity in the amount of fuzz on the cotton seed imported from the Sea Islands into Antigua, some doubt was expressed as to its purity. To test the matter some of the seed was graded, and each grade was sown on a separate plot; however, on reaping the cotton, the lint from the different plots did not present any marked difference, and the seed was no more uniform than before. The conclusion is drawn that the character of the lint is fixed, and does not alter with variations in the character of the seed. In St. Kitts and Nevis interest attaches to the cacao and rubber plantations which have been recently

started; the rubber plants consist of *Castilloa* and *Funtumia*. The work at the agricultural school in St. Kitts is worthy of mention; the practical course includes the cultivation of vegetables, the application of manures to pine and cotton crops, and the propagation of plants by budding and cuttings.

WE have received from the Minister of the Interior the twenty-fourth Bulletin issued by the Peruvian Corps of Mining Engineers. It contains the mineral statistics of Peru for 1904. The production in that year included 59,920 tons of coal, 38,683 tons of petroleum, 2209 tons of lead, 9503 tons of copper, 2675 tons of borates, 18,544 tons of rock salt, 21 tons of sulphur, 145,165 kilograms of silver, and 601 kilograms of gold. Compared with the production in the previous year, noteworthy increases are shown.

THE interesting paper on some phenomena of permanent deformation in metals read by Mr. G. H. Gulliver, of Edinburgh University, before the Institution of Mechanical Engineers in February has now been published in pamphlet form. In making a tension test of a metal bar as soon as the yield-point is reached, the deformation becomes visible to the naked eye as the well known Lüder's lines. Hitherto the lines occurring at the yield-point have been confused with the two straight depressions known as the "contractile cross." The author shows that the two phenomena are quite distinct. In his experiments flat steel bars were used  $\frac{1}{8}$  inch in thickness and of various widths from  $\frac{1}{2}$  inch to 4 inches.

THE second part of the mines and quarries general report for 1904 has been issued by the Home Office. It contains statistics of the persons employed and of the accidents that occurred. The total number of persons employed at mines and quarries in the United Kingdom and in the Isle of Man in 1904 was 974,634, of whom 877,057 were employed at mines. The death rate from accidents was 1.243 per 1000 persons employed at mines and 1.15 per 1000 at quarries. By the Act of 1903, the value of scientific training in mining is now shown to be appreciated by the Government, the holders of diplomas at institutions approved by the Secretary of State for the Home Department being eligible for managers' certificates after three years' practical experience instead of five as was formerly the case. The list of institutions that have been approved is given in the report, and comprises the Royal School of Mines, the universities of Birmingham, Cambridge, Durham, Glasgow, Leeds, London, Oxford, Sheffield and Wales, the University College, Bristol, the Glasgow Technical College, and the Wigan Mining College.

IN the *American Journal of Science* (vol. xx., No. 118) Mr. Bertram B. Boltwood quotes a number of analyses of minerals containing uranium and thorium, and interprets them by assuming that the ultimate disintegration products of the radio-active elements may include lead, barium, bismuth, the rare earths, argon, and hydrogen. The question is raised whether the quantities of these elements actually existing in nature have not been produced wholly by some such process of disintegration.

IN the *Atti dei Lincei* (vol. xiv. p. 188) B. Gosio describes how the decomposition of exceedingly dilute solutions of alkaline selenites, or, better, of alkaline tellurites, may be utilised as a delicate test for living bacterial contamination. Most living bacteria are capable of decomposing potassium tellurite with the production of a blackish precipitate, becoming themselves, when viewed under the microscope, tinged blackish grey. Dead bac-

teria or spores not undergoing actual development are totally without action on a solution of the tellurite. The test seems to be especially useful for ensuring sterility in the case of liquids or therapeutic sera destined for hypodermic injection.

THE many thermoelectric methods which have been devised during the past few years for the measurement of very high and of very low temperatures have proved themselves of a wide and general utility. But hitherto no instrument of a similar type has been made available for the accurate measurement of temperatures between  $0^{\circ}$  C. and  $200^{\circ}$  C. In the *Physical Review* (vol. xxi. p. 65) Mr. A. de Forest Palmer describes a thermojunction consisting of a soft iron wire in conjunction with an "advance" wire containing copper, nickel, and iron, by means of which temperatures within the extremes named may be determined with an error not exceeding 0.04 per cent. Such an instrument is easily calibrated, and in certain circumstances can profitably replace a mercury thermometer of a corresponding degree of accuracy.

*Le Radium* for September (2<sup>e</sup> année, No. 9) contains articles on the influence of the connections on the action of vacuum tubes, by M. Charbonneau, on the treatment of cancer with radium, by M. Darier, and a summary of current work connected with radio-activity.

THE *Journal of the Royal Sanitary Institute* for October (xxvi., No. 9) contains articles on the administration of the Food and Drugs Act, by Mr. Wellesley Harris, on the waste of infant life, by Dr. Nash, on hygiene in education, by Mr. White Wallis, and notes on common parasites found in bodies of animals used for food, by Mr. King.

WE have received "Contributions from the Research Laboratory and Sewage Experimental Station," Massachusetts Institute of Technology, Boston, vol. i., 1905. It contains several valuable papers, e.g. the mode of action of the contact filter in sewage purification, by Messrs. Phelps and Farrell, determination of organic nitrogen in sewage by the Kjeldahl process, by Mr. Phelps, a study of the methods in current use for the determination of free and albumenoid ammonia in sewage, by Mr. Phelps, and determination of the number of bacteria in sewage, &c., by Mr. Winslow.

MESSRS. F. VIEWEG AND SON, Brunswick, have published a fourth edition of "Hauptsätze der Differential- und Integral-rechnung," by Prof. R. Fricke.

MR. W. B. CLIVE has published a third edition of Dr. G. H. Bailey's "Second Stage Inorganic Chemistry (Theoretical)." This edition has been re-written and enlarged.

THE third, revised edition of "Leitfaden für das zoologische Praktikum," by Prof. W. Küenthal, has been published by Mr. Gustav Fischer, Jena. The second edition of this work was reviewed in *NATURE* of April 24, 1902 (vol. lxxv. p. 581).

THE first part of a work on "Die ätherischen Öle," by Dr. F. W. Semmler, has just been received from the publishers, Messrs. Veit and Co., Leipzig. It is proposed to issue the work in twelve parts which will make up three volumes, to be completed during next year. The work will be noticed when the whole of the parts have been received.

A THIRD edition of Mr. Tyson Sewell's "Elements of Electrical Engineering" has been published by Messrs. Crosby Lockwood and Son. The book was reviewed in

*NATURE* of November 20, 1902 (vol. lxxvii. p. 53), and it is only necessary to mention that more examples have been added to the appendix, and that particulars of the "Wright" and other electrolytic meters have been inserted.

A SECOND edition of Mr. J. W. Russell's "Elementary Treatise on Pure Geometry" has been published by the Clarendon Press. The first edition of the book was noticed in our issue of June 1, 1893 (vol. xlviii. p. 101). Besides numerous small improvements throughout, other changes have been made in the revised edition, and among these may be mentioned the re-arrangement of the examples and the omission of redundant ones. Each chapter has been made independent of following chapters; more use has been made of projection in proofs of theorems, and correlative theorems have been proved by reciprocation. An index has been added.

MESSRS. FLATTERS AND GARNETT, LTD., Deansgate, Manchester, have sent us a specimen of new storage cabinets made by them for lantern slides. Each drawer of the cabinet will hold 100 slides in five divisions, and is fitted with brass handle and space for movable card label. Single drawers are supplied, and cabinets are made with four, six, twelve, and twenty-four drawers. There are no grooves in the drawers, but the top edges are cut down a little, so that the slides rise above the edges and can readily be lifted out. The cabinets provide a convenient and neat means of storing lantern slides. A despatch box also submitted by Messrs. Flatters and Garnett is fitted at each end with a strip of brass which clasps the cover when the slides are in transit, and can be swung off immediately the slides are required. This box has the usual rubber packing to prevent shock and breakage.

### OUR ASTRONOMICAL COLUMN.

ANOTHER LARGE SUN-SPOT.—Another large group of sun-spots, the fourth or fifth this year to be visible to the protected naked-eye, is now to be seen on the solar disc not very far from the centre. The group, which consists of a large number of separate small nuclei, is, roughly, 100,000 miles across its longest diameter, and was first seen coming round the limb on Saturday, October 14.

M. BIGOURDAN'S ECLIPSE RESULTS.—M. Bigourdan, who was placed in charge of the Bureau des Longitudes expedition to Sfax (Tunis) to observe the recent total eclipse of the sun, communicated the preliminary results of his observations to a meeting of the Paris Academy of Sciences held on October 2. The greater part of his communication consisted of descriptions of the instruments employed and the conditions they were employed under.

A coronagraph, designed to take numerous large-scale photographs, in order to show the relation between the details of the inner corona and those on the corresponding regions of the solar disc, became deranged after the second plate was exposed, but the two plates obtained show numerous details of the inner corona. In a second coronagraph, of 0.95 m. focal length and 0.15 m. aperture, a green glass screen, transmitting only those wave-lengths near to  $\lambda$  530, was placed in front of the plate, and the exposure made to last throughout totality. The negative obtained shows the corona extending for about  $30'$  from the moon's limb.

Two spectroscopes having slits much longer than the diameter of the solar image were employed, the slits being so arranged that the spectrum of the coronal radiations at points situated at the ends of the sun's axis and equator respectively might be photographed. Photometric observations of the corona, both visual and photographic, were also made.

Observations of the terrestrial magnetic elements showed that the variations caused by the interposition of the moon were but small. The shadow bands formed a very striking